CLAIMS

What is claimed is:

1. A method for communications using interleaving, the method comprising:

interleaving elements of data in a source sequence to form an interleaved sequence, wherein adjacent elements in the interleaved sequence originally were separated by a first number of elements in the source sequence and originally adjacent elements in the source sequence are separated by at least a second number of elements in the interleaved sequence; and

transmitting the interleaved sequence of the elements of the data.

2. The method as set forth in claim 1 further comprising;

receiving the interleaved sequence; and

de-interleaving the elements of data in the interleaved sequence back to the source sequence for the elements of the data.

3. The method as set forth in claim 2 further comprising interpolating for any error in any of the elements of the data in the original sequence after the de-interleaving.

4. The method as set forth in claim 1 wherein the interleaving further comprises O(i) = S(h) where h = (i*K)modN, if h is not already a member of H and O(i) = S(h) where h = (i*K)modN + 1 if h is already a member of H, where S denotes the source sequence, O the interleaved sequence and K is a whole number greater than 1.

5. The method as set forth in claim 1 wherein the interleaving further comprises initializing an index number BB to be 0 and then for the sequence i=1 to i=N-1, O(i) = S(h) where h = (i*K + BB)mod N and if h = BB, then add 1 to BB and add 1 to h.

6. The method as set forth in claim 1 wherein the de-interleaving further comprises initializing BB to be 0 and then for the sequence i=1 to i=N-1, D(h) = O(i) where h = (i*K + BB)mod N and if h = BB, then add 1 to BB and add 1 to h.

7. A computer readable medium having stored thereon instructions for communications using interleaving which when executed by a processor, causes the processor to perform the steps of:

interleaving elements of data in a source sequence to form an interleaved sequence, wherein adjacent elements in the interleaved sequence originally were separated by a first number of elements in the source sequence and originally adjacent elements in the source sequence are separated by at least a second number of elements in the interleaved sequence; and

transmitting the interleaved sequence of the elements of the data.

8. The computer readable medium as set forth in claim 7 further comprising;

receiving the interleaved sequence; and

de-interleaving the elements of data in the interleaved sequence back to the source sequence for the elements of the data.

9. The computer readable medium as set forth in claim 8 further comprising interpolating for any error in any of the elements of the data in the original sequence after the de-interleaving.

10. The computer readable medium as set forth in claim 7 wherein the interleaving further comprises O(i) = S(h) where h = (i*K)modN, if h is not already a member of H and O(i) = S(h) where h = (i*K)modN + 1 if h is already a member of H, where S denotes the source sequence, O the interleaved sequence and K is a whole number greater than 1.

11. The computer readable medium as set forth in claim 7 wherein the interleaving further comprises initializing BB to be 0 and then for the sequence i=1 to 1=N-1, O(i) = S(h) where h = (i*K + BB)mod N and if h = BB, then add 1 to BB and add 1 to h.

12. The computer readable medium as set forth in claim 7 wherein the de-interleaving further comprises initializing BB to be 0 and then for the sequence i=1 to i=N-1, D(h) = O(i) where h = (i*K + BB)mod N and if h = BB, then add 1 to BB and add 1 to h.

13. A system for communications using interleaving, the system comprising:

a first interleaving processing system that interleaves elements of data in a source sequence to form an interleaved sequence, wherein adjacent elements in the interleaved sequence originally were separated by a first number of elements in the source sequence and originally adjacent elements in the source sequence are separated by at least a second number of elements in the interleaved sequence; and

a first communication system that transmits the interleaved sequence of the elements of the data.

14. The system as set forth in claim 13 further comprising:

a second communication system that receives the interleaved sequence; and

a second interleaving processing system that de-interleaves the elements of data in the interleaved sequence back to the source sequence for the elements of the data.

15. The system as set forth in claim 14 wherein the second interleaving processing system interpolates for any error in any of the elements of the data in the original sequence after the de-interleaving.

16. The system as set forth in claim 13 wherein the first interleaving processing system interleaves elements of data in a source sequence so that O(i) = S(h) where h = (i*K)modN, if h is not already a member of H and O(i) = S(h) where h = (i*K)modN + 1 if h is already a member of H, where S denotes the source sequence, O the interleaved sequence and K is a whole number greater than 1.

17. The system as set forth in claim 13 wherein the first interleaving processing system interleaves elements of data in a source sequence by initializing BB to be 0 and then for the sequence i=1 to 1=N-1, O(i) = S(h) where h = (i*K + BB)mod N and if h = BB, then add 1 to BB and add 1 to h.

18. The system as set forth in claim 13 wherein the second interleaving processing system de-interleaves elements of data in a source sequence by initializing BB to be 0 and then for the sequence i=1 to i=N-1, D(h) = O(i) where h = (i*K + BB)mod N and if h = BB, then add 1 to BB and add 1 to h.